# Civil Aviation Authority
# United Kingdom

# TYPE-CERTIFICATE DATA SHEET

## UK.TC.E.00105

for

CFM56-5B and CFM56-5C series engines

**Type Certificate Holder**

CFM International SA

2, boulevard du Général Martial Valin

F-75724 Paris Cedex 15

France

Model(s):

**CFM56-5B "SAC"**

CFM56-5B1, CFM56-5B1/P, CFM56-5B1/3, CFM56-5B2, CFM56-5B2/P, CFM56-5B2/3, CFM56-5B3/P, CFM56-5B3/P1, CFM56-5B3/3, CFM56-5B3/3B1, CFM56-5B4, CFM56-5B4/P, CFM56-5B4/P1, CFM56-5B4/3, CFM56-5B4/3B1, CFM56-5B5, CFM56-5B5/P, CFM56-5B5/3, CFM56-5B6, CFM56-5B6/P, CFM56-5B6/3, CFM56-5B7, CFM56-5B7/P, CFM56-5B7/3, CFM56-5B8/P, CFM56-5B8/3, CFM56-5B9/P, CFM56-5B9/3

**CFM56-5B "DAC"**

CFM56-5B1/2P, CFM56-5B2/2P, CFM56-5B3/2P, CFM56-5B3/2P1, CFM56-5B4/2P, CFM56-5B4/2P1, CFM56-5B6/2P, CFM56-5B9/2P

**CFM56-5C**

CFM56-5C2, CFM56-5C2/F, CFM56-5C2/G, CFM56-5C2/4, CFM56-5C2/F4, CFM56-5C2/G4, CFM56-5C2/P, CFM56-5C3/F, CFM56-5C3/F4, CFM56-5C3/G, CFM56-5C3/G4, CFM56-5C3/P, CFM56-5C4, CFM56-5C4/P, CFM56-5C4/1, , CFM56-5C4/1P

Issue: 01

Date of issue: 05 August 2024

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## Section 1 General (All Models)

### I. General

This Type-Certificate Data Sheet (TCDS) is the concise definition of the type-certificated product accepted and or approved by the CAA in the UK where EASA were the Type Certificating Authority.

This TCDS includes:

1. Details of the type design that affect the TCDS that have been approved or accepted by the CAA in the UK from 01 January 2021.

2. Details of the type design that affected the TCDS and were approved or accepted by EASA before 01 January 2021, and were incorporated into EASA TCDS EASA.E.003 at Issue 05 dated 12 December 2019 and are therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.

## Section 2 CFM56-5B and CFM56-5C

### I. General

### 1. Type / Variant or Model

**CFM56-5B "SAC"**

CFM56-5B1, CFM56-5B1/P, CFM56-5B1/3, CFM56-5B2, CFM56-5B2/P, CFM56-5B2/3, CFM56-5B3/P, CFM56-5B3/P1, CFM56-5B3/3, CFM56-5B3/3B1, CFM56-5B4, CFM56-5B4/P, CFM56-5B4/P1, CFM56-5B4/3, CFM56-5B4/3B1, CFM56-5B5, CFM56-5B5/P, CFM56-5B5/3, CFM56-5B6, CFM56-5B6/P, CFM56-5B6/3, CFM56-5B7, CFM56-5B7/P, CFM56-5B7/3, CFM56-5B8/P, CFM56-5B8/3, CFM56-5B9/P, CFM56-5B9/3

**CFM56-5B "DAC"**

CFM56-5B1/2P, CFM56-5B2/2P, CFM56-5B3/2P, CFM56-5B3/2P1, CFM56-5B4/2P, CFM56-5B4/2P1, CFM56-5B6/2P, CFM56-5B9/2P

**CFM56-5C**

CFM56-5C2, CFM56-5C2/F, CFM56-5C2/G, CFM56-5C2/4, CFM56-5C2/F4, CFM56-5C2/G4, CFM56-5C2/P, CFM56-5C3/F, CFM56-5C3/F4, CFM56-5C3/G, CFM56-5C3/G4, CFM56-5C3/P, CFM56-5C4, CFM56-5C4/P, CFM56-5C4/1, CFM56-5C4/1P

### 2. Type Certificate Holder

CFM International S.A.

2, boulevard du Général Martial Valin

F-75724 Paris Cedex 15

France

DOA ref.: EASA.21J.086

### 3. Manufacturer

**Safran Aircraft Engines, formally SNECMA**

10 allée du Brévent

CE 1420 - Courcouronnes

F91019 Evry Cedex

France

**GE Aviation**

One Neumann Way

Cincinnati - Ohio 45215

United States of America

## 4. Date of Application at EASA (Certificating Authority)

| | |
|---|---|
| CFM56-5C2, -5C3 | 15 December 1988 |
| CFM56-5C2/F, -5C3/F | 03 April 1992 |
| CFM56-5B1, -5B2 | 30 August 1990 |
| CFM56-5B4 | 08 June 1992 |
| CFM56-5B1/2, -5B2/2, -5B4/2 | 01 December 1992 |
| CFM56-5C2/G, -5C3/G, -5C4 | 26 February 1993 |
| CFM56-5B6/2, -5B5, -5B6 | 19 April 1994 |
| CFM56-5B1/P, -5B2/P, -5B3/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P | 21 February 1995 |
| CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4 | 14 June 1995 |
| CFM56-5C4/1 | 19 April 1994 |
| CFM56-5B7, -5B7/P | 03 December 1997 |
| CFM56-5B8/P, -5B9/P, -5B9/2P | 23 April 2001 |
| CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P | 14 December 2000 |
| CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1 | 25 January 2002 |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | 23 April 2004 |

## 5. Type Certification date at EASA (Certificating Authority)

| | |
|---|---|
| CFM56-5C2 | 31 December 1991 |
| CFM56-5C3 | 31 December 1991<br>withdrawn 24 May 1993 |
| CFM56-5C2/F, -5C3/F | 01 March 1993 |
| CFM56-5B1 | 02 February 1994 |
| CFM56-5B2 | 28 May 1993 |
| CFM56-5B4 | 02 February 1994 |
| CFM56-5B1/2, -5B2/2, -5B4/2 | 27 July 1994<br>withdrawn 25 July 2002 |
| CFM56-5C2/G, -5C3/G, -5C4 | 27 October 1994 |
| CFM56-5B6/2 | 30 October 1995<br>withdrawn 25 July 2002 |
| CFM56-5B5, -5B6 | 11 March 1996 |
| CFM56-5B1/P, -5B2/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P | 20 June 1996 |
| CFM56-5B3/P | 10 September 1996 |
| CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4, -5C4/1 | 17 April 1996 |
| CFM56-5B7 | 07 June 1999 |
| CFM56-5B7/P | 29 October 1999 |
| CFM56-5B8/P, -5B9/P, -5B9/2P | 25 July 2002 |
| CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P | 06 August 2003 |
| CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1 | 25 October 2004 |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | 15 September 2006 |

**6. Date of Application at CAA (Validating Authority)**

| | |
|---|---|
| CFM56-5C2, -5C3 | 20 September 2023 |
| CFM56-5C2/F, -5C3/F | 20 September 2023 |
| CFM56-5B1, -5B2 | 20 September 2023 |
| CFM56-5B4 | 20 September 2023 |
| CFM56-5B1/2, -5B2/2, -5B4/2 | 20 September 2023 |
| CFM56-5C2/G, -5C3/G, -5C4 | 20 September 2023 |
| CFM56-5B6/2, -5B5, -5B6 | 20 September 2023 |
| CFM56-5B1/P, -5B2/P, -5B3/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P | 20 September 2023 |
| CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4 | 20 September 2023 |
| CFM56-5C4/1 | 20 September 2023 |
| CFM56-5B7, -5B7/P | 20 September 2023 |
| CFM56-5B8/P, -5B9/P, -5B9/2P | 20 September 2023 |
| CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P | 20 September 2023 |
| CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1 | 20 September 2023 |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | 20 September 2023 |

**7. Type Certification date at CAA (Validating Authority)**

| | |
|---|---|
| CFM56-5C2 | 05 August 2024 |
| CFM56-5C3 | Withdrawn 24 May 1993 |
| CFM56-5C2/F, -5C3/F | 05 August 2024 |
| CFM56-5B1 | 05 August 2024 |
| CFM56-5B2 | 05 August 2024 |
| CFM56-5B4 | 05 August 2024 |
| CFM56-5B1/2, -5B2/2, -5B4/2 | Withdrawn 25 July 2002 |
| CFM56-5C2/G, -5C3/G, -5C4 | 05 August 2024 |
| CFM56-5B6/2 | Withdrawn 25 July 2002 |
| CFM56-5B5, -5B6 | 05 August 2024 |
| CFM56-5B1/P, -5B2/P, -5B4/P, -5B5/P, -5B6/P, -5B1/2P, -5B2/2P, -5B3/2P, -5B4/2P, -5B6/2P | 05 August 2024 |
| CFM56-5B3/P | 05 August 2024 |
| CFM56-5C2/4, -5C2/F4, -5C2/G4, -5C3/F4, -5C3/G4, -5C4/1 | 05 August 2024 |
| CFM56-5B7 | 05 August 2024 |
| CFM56-5B7/P | 05 August 2024 |
| CFM56-5B8/P, -5B9/P, -5B9/2P | 05 August 2024 |
| CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P | 05 August 2024 |
| CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1 | 05 August 2024 |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | 05 August 2024 |

Note: Administrative update to include compliance to the CAEP/11 requirements.

**II. Certification Basis**

**1. Reference Date for determining the applicable airworthiness requirements.**

15 December 1988

**2. State of Design Airworthiness Authority Type Certification Data Sheet Number**

EASA.E.003

**3. State of Design Airworthiness Authority Certification Basis**

Refer to TCDS EASA.E.003

## 4. UK CAA Certification Basis

### 4.1 Airworthiness Standards

| | |
|---|---|
| CFM56-5C2, -5C2/F, -5C3/F | JAR-E Change 7, NPA-E-10 |
| CFM56-5B1, -5B1/P, -5B1/2P, -5B2, -5B2/P, -5B2/2P, -5B3/P, -5B3/2P, -5B4, -5B4/P, -5B4/2P, -5B5, -5B5/P, -5B6, -5B6/P, -5B6/2P, -5B7, -5B7/P, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C3/F4, -5C3/G, -5C3/G4, -5C4, -5C4/1 | JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10,<br>Blue Paper C830 |
| -5B8/P, -5B9/P, -5B9/2P | JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10,<br>Blue Paper C830<br>• JAR-E Change 10, paragraphs:<br>• JAR-E 515 Critical Parts Integrity<br>• JAR-E 650 Vibrations Survey<br>• JAR-E 790 Water and Hail Ingestion<br>• JAR-E 850 Comp/Fan & Turbine shafts<br>JAA NPA-E-20, 03 December 1999 (Medium birds only) |
| CFM56-5C2/P, -5C3/P, -5C4/P, -5C4/1P | JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10,<br>Blue Paper C830<br>• JAR-E Change 10, paragraphs:<br>• JAR-E 515 Critical Parts Integrity<br>• JAR-E 650 Vibrations Survey<br>• JAR-E 790 Water and Hail Ingestion<br>• JAR-E 800 Bird Strike/Ingestion (Medium birds only)<br>• JAR-E 850 Comp/Fan & Turbine shafts |
| CFM56-5B3/P1, -5B3/2P1, -5B4/P1, -5B4/2P1 | JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10<br>JAR-E Amendment 11 paragraphs:<br>• JAR-E 515 Critical Parts Integrity<br>• JAR-E 650 Vibrations Survey<br>• JAR-E 790 Water and Hail Ingestion<br>• JAR-E 800 Bird Strike and Ingestion (Medium birds only)<br>• JAR-E 840 Rotors Integrity<br>• JAR-E 850 Comp/Fan & Turbine shafts |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | JAR-E Change 7, NPA-E-5, NPA-E-7, NPA-E-10<br>JAR-E Amendment 11 paragraphs:<br>• JAR-E 515 Critical Parts Integrity<br>CS-E paragraphs (published 24 October 2003):<br>• CS-E 650 Vibrations Surveys<br>• CS-E 745 Engine Acceleration<br>• CS-E 790 Ingestion of Rain and Hail<br>• CS-E 800 Bird Strike and Ingestion (Medium birds only)<br>• CS-E 840 Rotor Integrity<br>• CS-E 850 Compressor, Fan and Turbine Shafts |

### 4.2 Special Conditions (SC)

| | |
|---|---|
| CFM56-5B1, -5B1/P, -5B1/2P, -5B2, -5B2/P, -5B2/2P, -5B3/P, -5B3/2P, -5B4, -5B4/P, -5B4/2P, -5B5, -5B5/P, -5B6, -5B6/P, -5B6/2P, -5B7, -5B7/P, CFM56-5C2, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/4, -5C3/F, -5C3/F4, -5C3/G, -5C3/G4, -5C4, -5C4/1 | SC n° 1, Birds ingestion: Medium bird 1.134 kg (2.5 Lbs)<br><br>SC n° 2, Water and hail ingestion: AIA "Advisory proposal" PC 338-1 |

### 4.3 Equivalent Safety Findings (ESF)

| |
|---|
| For CFM56-5C/P series: JAR-E 800 Bird Strike and Ingestion at Change 10 (Medium birds only) |
| For CFM56-5B/P1 series: JAR-E 800 Bird Strike and Ingestion at Amendment 11 (Medium birds only) |
| For CFM56-5B/3 series: CS-E 800 Bird Strike and Ingestion (published 24 October 2003) (Medium birds only) |

### 4.4 Deviations

None

### 4.5 Environmental Protection

| | |
|---|---|
| All models | ICAO Annex 16 Volume II, second edition, including Amendment 4, effective 04 November 1999, as applicable to turbofan engines. NOx Standard in accordance with Part III, Chapter 2, § 2.3.2, c) (CAEP/4) |
| CFM56-5B1/3, -5B2/3, -5B3/3, -5B3/3B1, -5B4/3, -5B4/3B1, -5B5/3, -5B6/3, -5B7/3, -5B8/3, -5B9/3 | CS-34 Amendment 4 as adopted by CAA ORS9 Decision No.36 (applicable from 20 December 2023), meeting the requirement of ICAO Annex 16 Volume II, Amendment 10 applicable 1 January 2021.<br>• NOx levels in compliance with ICAO Annex 16 Volume II, Part III, Chapter 2, paragraph 2.3.2 e) (CAEP/8).<br>• HC, CO levels in compliance with ICAO Annex 16 Volume II, Part III, Chapter 2, paragraph 2.3.2.<br>• Maximum nvPM mass concentration levels in compliance with ICAO Annex 16 Volume II, Part III, Chapter 4, paragraph 4.2.2.1. nvPM mass and number emissions in compliance with Part III, Chapter 4, paragraphs 4.2.2.2 a) 1) and 4.2.2.2 b) 1) (CAEP/11 In-Production standard). |

## III. Technical Characteristics

### 1. Type Design Definition

The engine model is identified by an engine part list reference and an engine identification plug reference:

| **Engine Part List reference – CFM56-5B** | | | |
|---|---|---|---|
| CFM56-5B1 | 9324M20G01 to G03 | CFM56-5B1/P | 1887M10G01 to G05 |
| CFM56-5B1/2P | 1887M20G01 to G07 | CFM56-5B1/3 | 1887M10G06 and G07 |
| CFM56-5B2 | 9324M20G01 to G03 | CFM56-5B2/P | 1887M10G01 to G05 |
| CFM56-5B2/2P | 1887M20G01 to G07 | CFM56-5B2/3 | 1887M10G06 and G07 |
| CFM56-5B3/P | 1887M10G01 to G05 | CFM56-5B3/P1 | 1887M10G04 and G05 |
| CFM56-5B3/2P | 1887M20G01 to G07 | CFM56-5B3/2P1 | 1887M20G07 |
| CFM56-5B3/3 | 1887M10G06 and G07 | CFM56-5B3/3B1 | 1887M10G06 and G07 |
| CFM56-5B4 | 9324M20G01 to G03 | CFM56-5B4/P | 1887M10G01 to G05 |
| CFM56-5B4/P1 | 1887M10G04 and G05 | CFM56-5B4/2P | 1887M20G01 to G07 |
| CFM56-5B4/2P1 | 1887M20G07 | CFM56-5B4/3 | 1887M10G06 and G07 |
| CFM56-5B4/3B1 | 1887M10G06 and G07 | CFM56-5B5 | 9324M20G01 to G03 |
| CFM56-5B5/P | 1887M10G01 to G05 | CFM56-5B5/3 | 1887M10G06 and G07 |
| CFM56-5B6 | 9324M20G01 to G03 | CFM56-5B6/P | 1887M10G01 to G05 |
| CFM56-5B6/2P | 1887M20G01 to G07 | CFM56-5B6/3 | 1887M10G06 and G07 |
| CFM56-5B7 | 9324M20G01 to G03 | CFM56-5B7/P | 1887M10G01 to G05 |
| CFM56-5B7/3 | 1887M10G06 and G07 | CFM56-5B8/P | 1887M10G04 and G05 |
| CFM56-5B8/3 | 1887M10G06 and G07 | CFM56-5B9/P | 1887M10G04 and G05 |
| CFM56-5B9/2P | 1887M20G07 | CFM56-5B9/3 | 1887M10G06 and G07 |

| Engine Part List reference – CFM56-5C | | | |
|---|---|---|---|
| CFM56-5C2 | 9324M70G01 to G05<br>9324M70G07 | CFM56-5C2/F | 9324M70G02 to G05<br>9324M70G07 |
| CFM56-5C2/F4 | 9324M70G06 | CFM56-5C2/G | 9324M70G05 |
| CFM56-5C2/G4 | 9324M70G06 | CFM56-5C2/4 | 9324M70G06 |
| CFM56-5C2/P | 9325M70G01 to G05 | CFM56-5C3/F | 9324M70G02 to G05<br>9324M70G07 |
| CFM56-5C3/F4 | 9324M70G06 | CFM56-5C3/G | 9324M70G05 |
| CFM56-5C3/G4 | 9324M70G06 | CFM56-5C3/P | 9325M70G01 to G05 |
| CFM56-5C4 | 9324M70G06 | CFM56-5C4/P | 9325M70G01 to G05 |
| CFM56-5C4/1 | 9324M70G06 | CFM56-5C4/1P | 9325M70G01 to G05 |

| Engine Identification Plug reference (SIN KCU00) – CFM56-5C | | |
|---|---|---|
| | With PMUX | Without PMUX |
| CFM56-5C2 | 337-151-901-0 | 337-151-905-0 |
| CFM56-5C2/F | 337-180-401-0 | 337-180-411-0 |
| CFM56-5C2/F4 | 337-180-441-0 | 337-180-451-0 |
| CFM56-5C2/G | 337-180-601-0 | 337-180-611-0 |
| CFM56-5C2/G4 | 337-183-641-0 | 337-183-651-0 |
| CFM56-5C2/4 | 337-151-941-0 | 337-151-951-0 |
| CFM56-5C2/P | 337-183-641-0 | 337-183-651-0 |
| CFM56-5C3/F | 337-180-421-0 | 337-180-431-0 |
| CFM56-5C3/F4 | 337-180-461-0 | 337-180-471-0 |
| CFM56-5C3/G | 337-183-621-0 | 337-183-631-0 |
| CFM56-5C3/G4 | 337-183-661-0 | 337-183-671-0 |
| CFM56-5C3/P | 337-183-661-0 | 337-183-671-0 |
| CFM56-5C4 | 337-183-801-0 | 337-183-811-0 |
| CFM56-5C4/P | 337-183-801-0 | 337-183-811-0 |
| CFM56-5C4/1 | 337-183-821-0 | 337-183-831-0 |
| CFM56-5C4/1P | 337-183-821-0 | 337-183-831-0 |

| Engine Identification Plug reference (push-pull) - CFM56-5B SAC | | |
|---|---|---|
| | No EGT Monitoring | EGT Monitoring |
| CFM56-5B1 | 338-046-004-0 | |
| CFM56-5B2 | 338-046-023-0 | |
| CFM56-5B4 | 338-046-043-0 | |
| CFM56-5B5 | 338-046-052-0 | |
| CFM56-5B6 | 338-046-062-0 | |
| CFM56-5B7 | 338-126-941-0 | |
| CFM56-5B1/P | 338-046-004-0 | 338-046-004-0 |
| CFM56-5B1/3 | 338-046-004-0 | 338-046-004-0 |
| CFM56-5B2/P | 338-046-023-0 | 338-046-023-0 |
| CFM56-5B2/3 | 338-046-023-0 | 338-046-023-0 |
| CFM56-5B3/P | 338-122-732-0 | 338-122-732-0 |
| CFM56-5B3/P1 | 338-122-733-0 | 338-122-733-0 |
| CFM56-5B3/3 | 338-122-732-0 | 338-122-732-0 |
| CFM56-5B3/3B1 | 338-122-733-0 | 338-122-733-0 |
| CFM56-5B4/P | 338-046-043-0 | 338-046-043-0 |
| CFM56-5B4/P1 | 338-046-044-0 | 338-046-044-0 |
| CFM56-5B4/3 | 338-046-043-0 | 338-046-043-0 |
| CFM56-5B4/3B1 | 338-046-044-0 | 338-046-044-0 |

| | | |
|---|---|---|
| CFM56-5B5/P | 338-046-052-0 | 338-046-052-0 |
| CFM56-5B5/3 | 338-046-052-0 | 338-046-052-0 |
| CFM56-5B6/P | 338-046-062-0 | 338-046-062-0 |
| CFM56-5B6/3 | 338-046-062-0 | 338-046-062-0 |
| CFM56-5B7/P | 338-126-941-0 | 338-126-941-0 |
| CFM56-5B7/3 | 338-126-941-0 | 338-126-941-0 |
| CFM56-5B8/P | 338-130-001-0 | 338-130-001-0 |
| CFM56-5B8/3 | 338-130-001-0 | 338-130-001-0 |
| CFM56-5B9/P | 338-130-010-0 | 338-130-010-0 |
| CFM56-5B9/3 | 338-130-010-0 | 338-130-010-0 |

| Engine Identification Plug reference (push-pull) - CFM56-5B DAC | | | |
|---|---|---|---|
| | DAC 2 FN | DAC 2 COMB | DAC 2 COMB - NAC |
| CFM56-5B1/2P | 338-046-004-0 | 338-046-004-0 | 338-046-004-0 |
| CFM56-5B2/2P | 338-046-023-0 | 338-046-023-0 | 338-046-023-0 |
| CFM56-5B3/2P | 338-122-732-0 | 338-122-732-0 | 338-122-732-0 |
| CFM56-5B3/2P1 | 338-122-733-0 | 338-122-733-0 | 338-122-733-0 |
| CFM56-5B4/2P | 338-046-043-0 | 338-046-043-0 | 338-046-043-0 |
| CFM56-5B4/2P1 | 338-046-044-0 | 338-046-044-0 | 338-046-044-0 |
| CFM56-5B6/2P | 338-046-062-0 | 338-046-062-0 | 338-046-062-0 |
| CFM56-5B9/2P | | 338-130-010-0 | 338-130-010-0 |

| Engine Identification Plug reference (fusible) CFM56-5B SAC | | | | |
|---|---|---|---|---|
| | No EGT Monitoring | | EGT Monitoring | |
| | With PMUX | Without PMUX | With PMUX | Without PMUX |
| CFM56-5B1 | 338-046-002-0 | 338-046-006-0 | | |
| CFM56-5B2 | 338-046-021-0 | 338-046-026-0 | | |
| CFM56-5B4 | 338-046-041-0 | 338-046-046-0 | | |
| CFM56-5B5 | 338-046-050-0 | 338-046-055-0 | | |
| CFM56-5B6 | 338-046-060-0 | 338-046-065-0 | | |
| CFM56-5B7 | 338-128-440-0 | 338-128-445-0 | | |
| CFM56-5B1/P | 338-125-301-0 | 338-125-305-0 | | |
| CFM56-5B2/P | 338-122-720-0 | 338-122-725-0 | 338-128-660-0 | 338-128-665-0 |
| CFM56-5B3/P | 338-122-730-0 | 338-122-735-0 | 338-128-670-0 | 338-128-675-0 |
| CFM56-5B4/P | 338-122-740-0 | 338-122-745-0 | 338-128-680-0 | 338-128-685-0 |
| CFM56-5B5/P | 338-122-750-0 | 338-122-755-0 | 338-128-690-0 | 338-128-695-0 |
| CFM56-5B6/P | 338-122-760-0 | 338-122-765-0 | 338-129-700-0 | 338-129-705-0 |
| CFM56-5B7/P | 338-128-450-0 | 338-128-455-0 | 338-128-470-0 | 338-128-475-0 |

| Engine Identification Plug reference (fusible) CFM56-5B DAC | | | | | | |
|---|---|---|---|---|---|---|
| | DAC 2 FN | | DAC 2 COMB | | DAC 2 COMB - NAC | |
| | With PMUX | Without PMUX | With PMUX | Without PMUX | With PMUX | Without PMUX |
| CFM56-5B1/2P | 338-122-801-0 | 338-122-805-0 | 338-125-301-0 | 338-125-305-0 | 338-046-090-0 | 338-046-095-0 |
| CFM56-5B2/2P | 338-122-820-0 | 338-122-825-0 | 338-125-320-0 | 338-125-325-0 | 338-127-400-0 | 338-127-405-0 |
| CFM56-5B3/2P | 338-122-830-0 | 338-122-835-0 | 338-128-320-0 | 338-128-325-0 | 338-128-310-0 | 338-128-315-0 |
| CFM56-5B4/2P | 338-122-840-0 | 338-122-845-0 | 338-125-340-0 | 338-125-345-0 | 338-128-410-0 | 338-128-415-0 |
| CFM56-5B6/2P | 338-122-860-0 | 338-122-865-0 | 338-125-360-0 | 338-125-365-0 | 338-128-430-0 | 338-128-435-0 |

## 2. Description

High by-pass ratio and axial flow twin spool engine, including a one-stage fan, a four-stage low pressure compressor, a nine-stage high pressure compressor, a single annular combustor (SAC) for CFM56-5B and –5C engines or a double annular combustor (DAC) for CFM56-5B/2 engines, a one-stage high pressure turbine, a four-stage low pressure turbine for CFM56-5B engines or a five-stage low pressure turbine for the CFM56-5C engines, a dual channel full authority digital engine control unit.

The CFM56-5C engine models contain an adapter kit including mixer, exhaust plug, thrust reverser, measurement system for vibration level, fuel flow rate and oil temperature, and IDG cooling.

## 3. Equipment

The engine starter is part of the engine type design. Refer to the engine part list for details.

## 4. Dimensions

| | |
|---|---|
| CFM56-5B all models | Length : 2599.7 mm(1)<br>Width : 1908 mm<br>Height : 2105 mm<br>Centre of gravity (engine only) 5202 +/- 25 mm |
| CFM56-5C all models | Length : 2622 mm(1)<br>Width : 1946 mm<br>Height : 2250 mm<br>Centre of gravity (engine only) 5232 +/- 25 mm |

(1) From the fan case forward flange to the LP turbine case aft flange.

## 5. Dry Weight

| | |
|---|---|
| CFM56-5B “SAC” models | 2454.8 kg |
| CFM56-5B “DAC” models | 2500.6 kg |
| CFM56-5C all models | 2644.4 kg |

Note: Including basic engine, its accessories and optional accessories, as well as engine condition monitoring equipment.

## 6. Ratings

### 6.1 Take -Off Thrust:

**Constant thrust for ambient temperature below 30 °C**

| | | | | | |
|---|---|---|---|---|---|
| CFM56-5B1 | 13345 daN | CFM56-5C2 | 13878 daN | CFM56-5C3/F | 14457 daN |
| CFM56-5B1/P | 13345 daN | CFM56-5C2/F | 13878 daN | CFM56-5C3/F4 | 14457 daN |
| CFM56-5B1/2P | 13345 daN | CFM56-5C2/F4 | 13878 daN | CFM56-5C3/G | 14457 daN |
| CFM56-5B1/3 | 13345 daN | CFM56-5C2/G | 13878 daN | CFM56-5C3/G4 | 14457 daN |
| CFM56-5B2 | 13789 daN | CFM56-5C2/G4 | 13878 daN | CFM56-5C3/P | 14457 daN |
| CFM56-5B2/P | 13789 daN | CFM56-5C2/4 | 13878 daN | CFM56-5C4 | 15124 daN |
| CFM56-5B2/2P | 13789 daN | CFM56-5C2/P | 13878 daN | CFM56-5C4/P | 15124 daN |

| | | | | | |
|---|---|---|---|---|---|
| CFM56-5B2/3 | 13789 daN | | | CFM56-5C4/1 | 15124 daN |
| CFM56-5B3/P | 14234 daN | | | | |
| CFM56-5B3/P1 | 14234 daN | | | | |
| CFM56-5B3/2P | 14234 daN | | | | |
| CFM56-5B3/2P1 | 14234 daN | | | | |
| CFM56-5B3/3 | 14234 daN | | | | |
| CFM56-5B3/3B1 | 14234 daN | | | | |

**Constant thrust for ambient temperature below 45 °C**

| | | | | | |
|---|---|---|---|---|---|
| CFM56-5B4 | 12010 daN | CFM56-5B6 | 10453 daN | CFM56-5B7 | 12010 daN |
| CFM56-5B4/P | 12010 daN | CFM56-5B6/P | 10453 daN | CFM56-5B7/P | 12010 daN |
| CFM56-5B4/2P | 12010 daN | CFM56-5B6/2P | 10453 daN | CFM56-5B7/3 | 12010 daN |
| CFM56-5B4/3 | 12010 daN | CFM56-5B6/3 | 10453 daN | CFM56-5B8/P | 9608 daN |
| CFM56-5B5 | 9786 daN | | | CFM56-5B8/3 | 9608 daN |
| CFM56-5B5/P | 9786 daN | | | CFM56-5B9/P | 10364 daN |
| CFM56-5B5/3 | 9786 daN | | | CFM56-5B9/2P | 10364 daN |
| | | | | CFM56-5B9/3 | 10364 daN |

**Constant thrust for ambient temperature below 50 °C**

| | | | | | |
|---|---|---|---|---|---|
| CFM56-5B4/P1 | 12010 daN | | | | |
| CFM56-5B4/2P1 | 12010 daN | | | | |
| CFM56-5B4/3B1 | 12010 daN | | | | |

See Notes VI.1. and VI.2.

### 6.2 Maximum continuous thrust:

**Constant thrust for ambient temperature below 25 °C**

| | | | | | |
|---|---|---|---|---|---|
| CFM56-5B1 | 12940 daN | CFM56-5B5 | 9008 daN | CFM56-5C2 | 12588 daN |
| CFM56-5B1/P | 12940 daN | CFM56-5B5/P | 9008 daN | CFM56-5C2/F | 12588 daN |
| CFM56-5B1/2P | 12940 daN | CFM56-5B5/3 | 9008 daN | CFM56-5C2/F4 | 12588 daN |
| CFM56-5B1/3 | 12940 daN | CFM56-5B6 | 9008 daN | CFM56-5C2/G | 12588 daN |
| CFM56-5B2 | 12940 daN | CFM56-5B6/P | 9008 daN | CFM56-5C2/G4 | 12588 daN |
| CFM56-5B2/P | 12940 daN | CFM56-5B6/2P | 9008 daN | CFM56-5C2/4 | 12588 daN |
| CFM56-5B2/2P | 12940 daN | CFM56-5B6/3 | 9008 daN | CFM56-5C2/P | 12588 daN |
| CFM56-5B2/3 | 12940 daN | CFM56-5B7 | 10840 daN | CFM56-5C3/F | 13078 daN |
| CFM56-5B3/P | 12940 daN | CFM56-5B7/P | 10840 daN | CFM56-5C3/F4 | 13078 daN |
| CFM56-5B3/P1 | 12940 daN | CFM56-5B7/3 | 10840 daN | CFM56-5C3/G | 13078 daN |
| CFM56-5B3/2P | 12940 daN | CFM56-5B8/P | 8478 daN | CFM56-5C3/G4 | 13078 daN |
| CFM56-5B3/2P1 | 12 940 daN | CFM56-5B8/3 | 8 478 daN | CFM56-5C3/P | 13078 daN |
| CFM56-5B3/3 | 12 940 daN | CFM56-5B9/P | 9 008 daN | CFM56-5C4 | 13371 daN |
| CFM56-5B3/3B1 | 12940 daN | CFM56-5B9/2P | 9008 daN | CFM56-5C4/P | 13371 daN |
| CFM56-5B4 | 10840 daN | CFM56-5B9/3 | 9008 daN | CFM56-5C4/1 | 13371 daN |
| CFM56-5B4/P | 10840 daN | | | CFM56-5C4/1P | 13371 daN |
| CFM56-5B4/P1 | 10840 daN | | | | |
| CFM56-5B4/2P | 10840 daN | | | | |
| CFM56-5B4/2P1 | 10840 daN | | | | |
| CFM56-5B4/3 | 10840 daN | | | | |
| CFM56-5B4/3B1 | 10840 daN | | | | |

See Note VI.2, VI.4, and VI.5

## 7. Control System

The engine control software is included in the certified engine minimum configuration.

## 8. Fluids (Fuel, Oil Coolant, Additives)

### 8.1 Fuel and Additives:

Fuels: Refer to the applicable engine “Installation Manual” document.

Fuel Additives: Refer to the applicable “Specific Operating Instructions” document.

### 8.2 Oil:

Refer to the applicable Service Bulletin 79-0001.

## 9. Aircraft Accessory Drives

| CFM56-5B all models | | | | | |
|---|---|---|---|---|---|
| Component | Rotation direction (1) | Speed ratio (2) | Max. Power or Max Torque | Max Shear Torque (m.daN) | Max Overhung Moment (m.daN) |
| IDG | CCW | 0.5947 | 135 kW | 107 | 11.3 |
| Hydraulic pump | CCW | 0.256 | 16.9 m.daN | 49.7 | 1.8 |

| CFM56-5C all models | | | | | |
|---|---|---|---|---|---|
| Component | Rotation direction (1) | Speed ratio (2) | Max. Power or Max Torque | Max Shear Torque (m.daN) | Max Overhung Moment (m.daN) |
| IDG | CCW | 0.5947 | 135 kW | 107 | 11.3 |
| Hydraulic pump | CCW | 0.256 | 16.9 m.daN | 49.7 | 2.1 |

(1) CW = Clock Wise; CCW = Counter Clock Wise

(2) Reference rotation speed: core engine speed (N2)

## 10. Maximum Permissible Air Bleed Extraction

| CFM56-5B and CFM56-5C all models | | |
|---|---|---|
| Location | LP rotor speed | Flow limit |
| Fan bleed | All speeds above minimum idle | 2 % of fan airflow |
| HPC stage 5 only | Idem | 10 % of core airflow |
| HPC stage 9 only | From minimum idle to 61 % N1K | 14 % of core airflow |
| | From 61 % to 82.5 % N1K | From 14 % to 7 % of core airflow (linear variation) |
| | Above 82.5 % N1K | 7 % of core airflow |
| HPC stage 5 / stage 9 combined bleed | From minimum idle to 61 % N1K | 14 % of core airflow |
| | From 61 % to 82.5 % N1K | From 14 % to 7 % of core airflow (linear variation) |
| | Above 82.5 % N1K | 10 % of core airflow |

# IV. Operating Limitations

## 1. Temperature Limits

### 1.1. Exhaust Gas Temperature in Degree Centigrade.

Maximum permitted gas temperature (EGT measured at T49.5 station):

| Models | Take-off | Max Continuous | Start-up | In-flight start-up |
|---|---|---|---|---|
| CFM56-5B1, -5B2, -5B4, -5B5, -5B6, -5B7, -5C2, -5C2/4 | 950 °C | 915 °C | 725 °C | |
| CFM56-5C2/F, -5C2/F4, -5C3/F, -5C3/F4 | 965 °C | 930 °C | 725 °C | |
| CFM56-5C2/G, -5C2/G4, -5C2/P, -5C3/G, -5C3/G4, -5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P | 975 °C | 940 °C | 725 °C | |
| CFM56-5B1/P, -5B1/2P, -5B1/3, -5B2/P, -5B2/2P, -5B2/3, -5B3/P, -5B3/P1, -5B3/2P, -5B3/2P1, -5B3/3, -5B3/3B1, -5B4/P, -5B4/P1, -5B4/2P, -5B4/2P1, -5B4/3, -5B4/3B1, -5B5/P, -5B5/3, -5B6/P, -5B6/2P, -5B6/3, -5B7/P, -5B7/3, -5B8/P, -5B8/3, -5B9/P, -5B9/2P, -5B9/3 | 940 °C | 905 °C | 725 °C | 850 °C |

The duration envelope permitted at these temperatures is specified in the applicable “Specific Operating Instructions” document.

All engine models are certified with a transient overshoot of the maximum temperature allowed during take-off. The duration envelope permitted at these temperatures is specified in the applicable ‘Specific Operating Instructions” document.

### 1.2. Fuel Inlet Temperature (Degree Centigrade)

| | **CFM56-5B all models** |
|---|---|
| Maximum temperature | 54°C at pump inlet |
| Minimum temperature | Minus 54°C at pump inlet |
| Minimum pressure | Greater than or equal to 34.4 kPa above kerosene vapor pressure |

| | **CFM56-5C all models** |
|---|---|
| Maximum temperature | 60°C at pump inlet |
| Minimum temperature | Minus 54°C at pump inlet |
| Minimum pressure | Greater than or equal to 34.4 kPa above kerosene vapor pressure |

### 1.3. Oil Temperature (Degree Centigrade)

| | |
|---|---|
| Minimum for starting | Minus 40 (type II oils) |
| Maximum Operating temperature (at supply pump outlet) | 140 at steady state take-off condition<br>155 at transient state condition (15 minutes maximum) |

## 2. Pressure Limits

### 2.1. Fuel Pressure

In operating conditions, fuel pressure at the fuel pump inlet has to be maintained at least 34.4 kPa above kerosene vapor pressure.
(See applicable "Installation Manual", Part A, Section 5).

### 2.2. Oil Pressure (Differential Oil Pressure)

Minimum: 89.6 kPa at idle (differential pressure).
In normal operating conditions, oil pressure is function of HP rotor rotation speed (N2). See applicable “Specific Operating Instructions”, Section 6.
The running time with oil pressure below 90,0 kPa, due to negative acceleration (negative G), is limited to 10 seconds maximum.

## 3. Rotational Speed Limits.

**Maximum speed at all flight phases:**

| | N1- LP rotor (rpm) | N2 – HP rotor (rpm) |
|---|---|---|
| CFM56-5B all models | 5200 (104 %) | 15183 (105 %) |
| CFM56-5C2, -5C2/F, -5C2/G, -5C3/F, -5C3/G | 4800 (100.3 %) | 15183 (105 %) |
| CFM56-5C2/F4, -5C2/G4, -5C2/4, -5C2/P, -5C3/F4, -5C3/G4,<br>-5C3/P, -5C4, -5C4/P, -5C4/1, -5C4/1P | 4985 (104.2 %) | 15183 (105 %) |

At max continuous, N1 speed permitted by control system shall not exceed 5130 rpm (102.6%)

**Minimum speed during in-flight icing conditions:**

For flight operation under icing conditions, the minimum N2 rating allowed is 58.8% (8500 rpm) for all engine models.

## 4. Installation Assumptions

See installation manual.

## 5. Time Limited Dispatch

The engine has been approved for Time Limited Dispatch. The maximum rectification period for each dispatchable state is specified in the documents GEK 103085 for the CFM56-5B models and GEK 100741 for the CFM56-5C models.

# V. Operating and Service Instructions

| | CFM56-5C all models | CFM56-5B all models |
|---|---|---|
| Specific Operations Instructions | CFM TP OI-12 | CFM TP OI-13 |
| Installation Manual | CFM 6-7536 | CFM 2129 |
| Maintenance Manual | Refer to the Appropriate Aircraft Maintenance Manual | Refer to the Appropriate Aircraft Maintenance Manual |
| Shop Manual | CFM TP SM-8 | CFM TP SM-9 |

## VI. Notes

1. The take-off thrust, with the associated limits, shall not be used continuously more than 5 minutes. The duration may be extended to 10 minutes in case of engine failure. If the duration exceeds 5 minutes, this shall be written in the engine log book.

2. Thrust values are defined for the following operating conditions:
   - Reference conditions : 101,32 kPa / +15 °C.
   - Without air bleed or power extraction other than those required for engine operation.
   - With an exhaust system:
     - Divided flow for CFM56-5B engines,
     - Mixed flow for CFM56-5C engines.
   - With 100% recovery ratio and without base drag (corrective method defined in the “Acceptance Test Data Folder” document.

3. The life limits of certain engine parts and other engine Airworthiness Limitations are specified in the chapter 5, “Airworthiness Limitations” section of the applicable “Engine Shop Manual.

4. CFM56-5B7 and CFM56-5B7/P:

   - Maximum continuous thrust of CFM56-5B7 and CFM56-5B7/P is identical to CFM56-5B4 and CFM56-5B4/P (24370 lbs / 10840 daN SLS) up to 25000 feet altitude (7620 m).

   - Above 25000 feet (7620 m), maximum continuous thrust becomes the maximum climb rate identical to CFM56-5B2 and CFM56-5B2/P.

5. CFM56-5B8/P:
   - Maximum continuous thrust of CFM56-5B8/P is proportional to CFM56-5B9/P up to 18000 feet altitude (5486 m), and identical to CFM56-5B5 and CFM56-5B5/P above.

6. The EASA Type Certificate EASA E 003, which was adopted by UK CAA replaces DGAC-France Type certificates and Type Certificate Data Sheets M17 and M-IM28.

7. The type certificate holder, CFM International S.A., is a company jointly owned by Safran Aircraft Engines, formerly Snecma (France) and GE Aviation (USA). CFM International is responsible for the certification program, sales and customer support for CFM56 engines. With respect to the benefits of type certification for production of series engines, Safran Aircraft Engines and General Electric function as licensees of CFM International S.A.

8. The engine assembly line is identified by a 3 digit prefix in the engine serial number: even number for GE Aviation and odd number for Safran Aircraft Engines. Refer to the latest revisions of CFM56-5B Service Bulletin 72-0781 “CFM56-5B Engine Serialization Manufacturing Sequence” or CFM56-5C Service Bulletin 72-0697 “CFM56-5C Engine Serialization Manufacturing Sequence” for a list of the applicable serial numbers.

9. CFM56-5B engines are approved for use with thrust reverser systems as specified in the following aircraft Type Certificates:
   - Airbus A318-111, 112 basic definition - Identification number 00P710PC002/C00
   - Airbus A319-111, 112, 113, 114, 115 basic definition - Identification number 00J710P1B01/C00
   - Airbus A320-111, 211, 212, 214, 215, 216 basic definition - Identification number 00D710P1202/C00
   - Airbus A321-111, 112, 211, 212, 213, basic definition - Identification number 00D710P1202/C00.

   For CFM56-5C engines, approved thrust reverser systems are included in the engine parts list (volume II, EBU).

## Section 3 Administration

### I. Acronyms and Abbreviations

| Acronym / Abbreviation | Definition |
|---|---|
| ARINC | Aeronautical Radio, Incorporated |
| AGB | Accessories Gearbox |
| CNA | Common Nozzle Assembly |
| DIS | Drawing Introduction Sheet |
| EASA | European Union Aviation Safety Agency |
| ESF | Equivalent Safety Finding |
| EBU | Engine Build Unit |
| EEC | Engine Electronic Controller |
| EMI | Electro Magnetic Interference |
| FADEC | Full Authority Digital Engine Control |
| HP | High Pressure |
| ICAO | International Civil Aviation Organisation |
| IDG | Integrated Drive Generator |
| IP | Intermediate Pressure |
| LP | Low Pressure |
| rpm | Revolutions per Minute |
| SC | Special Conditions |
| TCDS | Type Certificate Data Sheet |
| TC | Type Certificate |
| TGT | Turbine Gas Temperature |
| CAA | Civil Aviation Authority |

## II. Type Certificate Holder Record

| TCH Record | Period |
|---|---|
| CFM International S.A.<br>2, boulevard du Général Martial Valin<br>F-75724 Paris Cedex 15<br>France<br><br>Design Organisation Approval No.: EASA.21J.086 | Since initial issue |

## III. Amendment Record

| TCDS Issue No. | TCDS Issue Date | Changes | TC Issue and Date |
|---|---|---|---|
| 01 | 05 Aug 2024 | - Section 1 is added to provide explanatory notes about the details of the type design that affect the TCDS, that have been approved or accepted by the CAA in the UK from 01 January 2021 and that the design changes accepted by EASA before 01 January 2021 were incorporated into EASA TCDS EASA.E.003 at Issue 05 dated 12 December 2019 were therefore accepted by the UK under Article 15 of Annex 30 of the UK-EU Trade and Cooperation Agreement.<br>- Section 2 (II) (1), (2), (3), and (4) added to provide information about certifying authority and certification basis applied by the certificating authority.<br>- Section 2 (II) (4.5) updated with regards to the certification basis for environmental protection CAEP/11 in line with EASA major change approval 10080922 which was accepted in accordance with the section 2.2 of TIP between EASA and UK CAA. | Issue 01<br>05 Aug 2024 |

– END –